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Yorkshire Philosophical Society.

ANNUAL REPORT

FOR

MDCCCLXXXVI.

BRITISH MUSEUM
NATURAL HISTORY

ANNUAL REPORT

OF THE COUNCIL

OF THE

YORKSHIRE PHILOSOPHICAL SOCIETY

FOR

MDCCCLXXXVI.

PRESENTED TO THE ANNUAL MEETING,

FEBRUARY 1st, 1887.

BRITISH MUSEUM NATURAL HISTORY

YORK:
J. SOTHERAN, BOOKSELLER, CONEY STREET.
1887.

TRUSTEES

OF

THE YORKSHIRE MUSEUM,

APPOINTED BY ROYAL GRANT.

TEMPEST ANDERSON, M.D.
EDWIN GRAY.
WILLIAM LAWTON.
F. L. MAWDESLEY.
T. S. NOBLE.
S. W. NORTH.
REV. CANON RAINE, D.C.L.
WILLIAM WALKER.

PATRONESSES

OF THE

Yorkshire Philosophical Society.

HER MAJESTY THE QUEEN.

H. R. H. THE PRINCESS OF WALES.

PATRONS.

H. R. H. THE PRINCE OF WALES, K.G.

H. R. H. THE DUKE OF CONNAUGHT, K.G.

HIS GRACE THE ARCHBISHOP OF YORK, F.R.S.

OFFICERS OF THE SOCIETY, 1887.

PRESIDENT:

His Grace the Archbishop of York, F.R.S.

VICE-PRESIDENTS:

The Right Hon. Lord Londesborough.
The Hon. Payan Dawnay.
The Very Rev. the Dean of York.
The Rev. Canon Raine, D.C.L.
William Reed, F.G.S.
John Francis Walker, M.A., F.L.S., F.G.S., F.C.S., &c.
William Walker, F.G.S.
S. W. North, F.G.S.
William Matterson, M.D.
Tempest Anderson, M.D., B.Sc., Fellow of University College, London.

HON. TREASURER:

Edwin Gray, LL.M.

COUNCIL:

Elected 1885. .Joseph Wilkinson, F.R.G.S.
George Oldfield.
Richard Pearson.
Henry Cowling.
Elected 1886. .Rev. H. L. Clarke, M.A., F.R.G.S.
James Edmund Clark, B.A., B.Sc.
The Rev. W. C. Hey, M.A.
W. Monkhouse.
Elected 1887. .James Backhouse, Jun.
Anthony Buckle, B.A.
George Cussons.
G. S. Gibb, LL.B.

HON. SECRETARY:

T. S. Noble, F.G.S.

CURATORS:

Geology	W. Reed, F.G.S.
Mineralogy	W. H. Hudleston, M.A., F.R.S.
Insects and Custacea	Rev. W. C. Hey, M.A.
Comparative Anatomy	T. Anderson, M.D.
British Ornithology	J. Backhouse, Jun.
Antiquarian Department	Rev. W. Greenwell, D.C.L. F.R.S. Rev. Canon Raine, D.C.L.
Botany	William Matterson, M.D.
Conchology	Rev. W. C. Hey, M.A.
Observatory	T. S. Noble, F.G.S.
Meteorology	J. E. Clark, B.A. B.Sc.
Laboratory and Library	Rev. H. L. Clarke, M.A. F.R.G.S.
Garden Committee	Rev. Canon Raine, D.C.L. William Matterson, M.D James Melrose.

KEEPER OF THE MUSEUM:

Henry Maurice Platnauer, A.R.S.M., B.Sc.

REPORT OF THE COUNCIL

OF THE

YORKSHIRE PHILOSOPHICAL SOCIETY,

FEBRUARY 1ST, 1887.

Your Council regret that they have to report that the depression, Agricultural and Commercial, which at present exists in this country, has to a considerable extent diminished the income of the Society as compared with that of last year.

The amount received for Subscriptions, Admission Fees, and for Members' keys, for the past year, amounts to £746. 5s. 0d., as compared with £800. 10s. 0d., the amount derived from similar sources for the previous year, showing a decrease of £54. 5s. 0d. on these items alone. There is also a decrease of £38. 16s. 0d. in the amount received at the gate as compared with similar receipts for the year 1885.

Referring to the disbursement side of the account, it may be observed that your Council have been called upon to repair the Archway in St. Leonard's Place, immediately in front of the School for the Blind, the cost of the repairs amounted to the sum of £20, and the result of the balance sheet now submitted is that a balance of £79. 11s. 0d. remains due to the Treasurer.

Your Council are fully aware that it is desirable that this debt should not be increased, and a system of economy and retrenchment will be commenced, by which it is hoped that the debt will be extinguished in the course of the present year. Under these circumstances, it will be the duty of the Council during the present year not to sanction any expenditure except, unless under very special circumstances in the purchase of specimens, until more prosperous times. Further details as to the financial position of the affairs of the Society will be given when the Balance Sheet of the Treasurer is read.

In other respects your Council report that the Museum and its varied collections, were never in a more efficient state, and it is with gratification that they have to announce that your kind and liberal benefactor, Mr. Wm. Reed, the Honorary Curator of Geology has undertaken to build a Gallery to the Tertiary Room without any cost to the Society, and to furnish the same with cases.

The Report will now deal with the various Scientific Departments of the Museum.

ANTIQUARIAN DEPARTMENT.—The past year has not been an eventual one in the Antiquarian Department. A smaller sum than usual has been expended on Antiquities for the simple reason that comparatively few objects have been discovered.

The collections are now so large that every fresh curiosity can be placed at once in its proper position to the advantage of its neighbours.

During the year the specimens of ancient woodcarving and stained glass, which the Society has been collecting for some time, have been arranged and exhibited. They are a very painful evidence of the destruction that has been wrought in so many Parish Churches.

Considerable additions have been made during the same time to the already fine collection of English pottery, which has been more advantageously displayed upon the walls of the Hospitium.

In the course of the past year the ancient British boat discovered at Brigg in Lincolnshire was very kindly offered as a gift to the Society. It was, however, found impossible to accept it, as the size and weight of the vessel forbade its introduction into any room assigned to the Antiquarian department.

The staircase and spouts of the Hospitium have been put into good repair, and that building is now in excellent order. All that is required for it is a little asphalting to keep the rain and flood water out of the walls at the base.

As the last edition of the Catalogue of Antiquities is nearly exhausted, a new edition must be printed in the course of the Spring or Summer.

Geology.—Donations to this department have been received from the following gentlemen :—Mr. W. Reed, F.G.S., (the Honorary Curator), Col. D. C. Walker, R.E., Mr. J. F. Walker, M.A., Mr. C. H. Parkinson, Lieut. Col. Peckitt, Mr. C. E. Leeds, and Mr. W. Collins of Knaresborough. Specimens have also being collected by the Keeper of the Museum, chiefly from places on the Coast between Scarborough and Whitby.

During the year a number of specimens has been incorporated into the general collection ; the collection presented last year by the Honorary Curator has been arranged (*Zoologically*), labelled, and catalogued, while the stratigraphical secondary collection has been virtually completed.

Regret has often been expressed that the magnificent collection of Palæozoic fossils, presented to the Society by the Honorary Curator, should have to be put away in drawers from want of space for its exhibition. Indeed, the only Palæozoic fossils exhibited at present are from the Yorkshire Carboniferous, and the Durham Permian rocks. To meet this difficulty the Honorary Curator has undertaken to build a gallery in the room at present devoted to the Tertiary Collection, and to provide the gallery with wall cases. The space thus gained will amply suffice for the exhibition of the splendid series of fossils at present hidden away.

Mineralogy.—There is but little alteration to report in this department. The Honorary Curator presented a small collection of Minerals, which, it is hoped, may prove an useful addition from the fact that some species, not previously possessed by the Society, are therein represented by specimens of convenient size.

Thirty specimens of *Basalt*, with enclosures, chiefly from Finkenberg, were presented by Mr. J. F. Walker, F.G.S.

A small collection of hand specimens was presented by Miss Schwabe of Fulford, and a specimen of *Strontianite* by Miss Dillon of Coney street.

An exchange was effected with the Giggleswick Grammar School, by which the Society obtained four specimens of *Tennantite* ; and the mineralogical collection has been further enriched by 124 models of crystals (in pear wood), presented by Mr. William Reed, F.G.S.

The collection of rocks has been steadily accummulating for a considerable time, and it now becomes a question of some consequence as to whether a selection from this collection might not be exhibited in some suitable place.

Petrology has come to the front so much of late years, that a good rock collection seems an almost indispensable adjunct of every Natural History Museum.

Comparative Anatomy.—The Honorary Curator of this Department reports that the collection under his care is in good order. The Crocodile's skin presented last year by Rowley C. Falkner, Esq., has been carefully stuffed. The most interesting addition that has been made to the collection during the past year is the skull of a rabbit, exhibiting a curious and abnormal growth of the incisors.

British Ornithology.—The work of renovating the specimens in the Rudston collection has steadily progressed during the year, and several specimens have been added which are of special interest as Yorkshire killed birds. Among them may be mentioned the Little Gull *(Larus Minutus)* and the Manx Shearwater *(Puffinus Anglorum)*, both shot on the coast near Scarbro' during the Autumn, and a case containing a pair of Hobbys (*Falco subbuteo)*, both of which were captured in 1876, in the neighbourhood of Doncaster.

A capital series of British Birds' eggs, most of them collected in the immediate vicinity of York, have also been added by presentation, and the entire oological cabinet has been carefully examined and re-arranged according to the classification adopted by Professor Huxley.

Conchological Department.—The Conchological Department has received an important addition during the past year, in the shape of a considerable collection of Shells from Aden, collected by the Rev. T. Baynham at that place, and presented by him to the Society. Some of the species are new to our collection, but all the specimens are of value as they are singularly fine and in their natural state, with epidermis and operculum (where present) preserved. The series includes some beautiful examples of the genera, *Cypraea*, *Conus*, *Pyrula*, *Murex*, *Ranella*, *Turritella*, *Arca*, *Cardium*, &c.

The Curator ventures to express a hope that when the gallery (given by the Honorary Curator of Geology) has been erected in the Tertiary Room, hanging cases will be erected by the Society for the proper display of our concealed Conchological treasures.

INSECTS AND CRUSTACEA.—The only additions to these Departments during the past year, are a fine specimen of the Great Northern Stone Crab *(Lithodes Maia)*, taken off Hartlepool, and a small collection of insects from New Zealand.

BOTANY.—The English and Foreign Herbaria are in a good state of preservation. Through the kind assistance of Mr. Ball, of St. Leonard's Place, the Curator was able to purchase 150 dried specimens of Foreign Ferns, collected and named by the late Mr. Baines the Sub-Curator of the Museum, which the Curator of Botany considers a valuable addition.

The late Mr. Rudston-Read, who took such a warm interest in every matter relating to the Grounds and Gardens of the Museum, presented us very shortly before his death with a valuable collection of Stove, Greenhouse, and hardy Herbaceous plants, including Palms, Orchids, Tropical Mosses, and Ferns, a list of which is enclosed.

Palms	Latania borbonica. Seforthia elegans. Phœnix rupicola. Corypha gebunga. Brahea filamentosa.
Orchids	Acrides affine. Caclogyne cristata. Saccolabium ampulaceum.
Miscellaneous	Curculigo recurvata. Begonia Rex. Dahlias, single. Eucalyptus sp. Dracœna sp. Coleus Ariel. Coleus Ada Sentance,

Tropical Mosses	Selaginella Caulescens major. ,, Viticulosa.
Ferns	Adiantum Bausei. ,, Farleyense. ,, Assimile. Doryopteris Palmata. Pteris serrulata.

HARDY HERBACEOUS PLANTS.

Alpine & Herbaceous	Pyrethrum roseum double fld. ,, ,, single fld. Convolvulus mauritanicus. Iberis corifolia. Montbrettia crocosmiœflora. Oleria Hastata. Veronica Lyalli. White Pink "Mrs. Sinkins."

Library.—The Honorary Curator reports that considerable additions have been made to this department during the year. Mr. W. Reed has added several important works, notably vols. XIV., XV., and XVI., of the "Challenger" reports, to the "Reed" Reference Library. The Society is also indebted to Mr. Reed for the donation of a large book case, which has afforded sufficient accommodation for a large number of books hitherto stowed away in cupboards.

The Trustees of the British Museum have not only supplied us with all publications issued under their direction during the current year, but have most generously sent us 13 volumes towards filling up the gaps in our series of past publications. The valuable publications of the Indian Survey have been regularly forwarded to us, and the Norwegian and United States Governments have presented us with the splendid works issued under their direction during the year. It is to be regretted that our own Government has not hitherto profitted by these examples.

Meteorology.—The year 1886 was colder than any since 1879. Indeed, since 1841, only five other years—1870, 1860, 1856, 1855, and 1853,—have been colder. This was not due to any excessive severity, but to the prolonged low temperature which lasted until the middle of August, up to which date no two consecutive weeks were warmer than the average. Had it not been for two or three remarkable "hot spells" in March, May, and July, and the mild character of the succeeding three months, the result of such an untoward Spring would have been most disastrous. One probable result is the remarkable lateness of early bulbs and other Spring flowers, which Gardeners complain they cannot force as usual.

SUNSHINE shows a marked increase, although still below the average. An error of focussing was discovered in February, which must have slightly reduced the amount recorded, not only in that month and January, but also in previous years. A careful comparison with other Stations allows us to hope that the error is not very extensive. The totals in November and December are unusual.

RAIN fell on 205 days, 39 in excess of the dry year, 1884; the total amount 29·43 inches, is 4¼ inches in excess of the average from 1841 to 1885. But recent years have been so remarkably wet that the mean for 1871—1885 is 27·45 inches, compared with 24·01 from 1841—1870. The number of rainy days is similarly greater. The rainfall on July 25th was one of the heaviest in our records.

FLOODS were more frequent than in the previous year, the highest being on March 22nd, (12ft. 6 in.)

THE BAROMETER, on December 8th, fell to 27·777, a few minutes after 9 p.m., a point unprecedented at York. Only once before has it been below 28, namely 27·29 in January, 1843. Equally remarkable was the prolonged period of depression, whilst it fell below 29 twice again within the week. Hence the low mean barometer for December, 29·606 (the same as in January) is not surprising. We may note, too, that the highest reading was barely half a month earlier, 30·693, a range of 2·916 inches. The recorded range for York now exceeds 3 inches.

AURORAS were hardly noticed, and the abnormal sun-glows were less frequent and conspicuous. Indeed the day glow has apparently disappeared.

The Tables have been altered this year so as to embrace the items contained in the International sheets. The Sunshine returns and maximum of the Barometer are additional; the latter must be subject to some error in the absence of a recording instrument. We have to thank R. Thompson, Esq., for a series of returns, including those from Oswaldkirk, on the southern slope of the Hambletons, about 25 miles N.E. from York. It will be noted that *less* sunshine is recorded each month from May to October, but more in the Winter and Spring, a condition of things almost exactly reversed in the rainfall. This may be accidental, but it is worth bearing in mind for further investigation.

The Society has lost by death during the past year ten Members and two Lady Subscribers; and nineteen Members, nine Lady Subscribers, and three Associates by resignation; whilst thirteen new Members, six Lady Subscribers and one Associate have joined the Society during the year.

Amongst those whom the Society has lost by death during the past year are the following Members:—

W. H. Rudston-Read, Esquire, M.A., F.L.S., William Atkinson, Esquire, and Thomas Ellis, Esquire.

Mr. Rudston-Read, who at the time of his death was one of our honoured Vice-Presidents, appears first to have joined the Society in the year 1846.

Mr. Rudston-Read, in the early years of his life, was an ardent naturalist, and he had formed with great taste and at considerable cost, a valuable collection of British birds. This collection, one of the chief ornaments of our Museum, and a most important aid to the study of British Ornithology, he generously gave to our Society, together with a considerable donation towards the expense of the cases required for its display. From the commencement of his membership, to within a year or two of his death, Mr. Rudston-Read always took a lively interest in all that concerned the welfare of the Society.

It was chiefly by his aid and active exertions, in obtaining contributions, that the three large rooms which form the northern side of our Museum, were built some years ago, and now form an important addition for the exhibition of the Saurian, Geological, and Natural History collections. In his latter years, Mr. Read undertook the supervision of the grounds which surround our Museum, and these owe much of their beauty to his good taste and fostering care. In him the Society has lost a good friend and benefactor.

Mr. William Atkinson, an eminent Architect of this city, was a member of our Council at the time of his death, and had kindly undertaken to supervise the erection of the new gallery, to be erected in the Tertiary Room, by the great liberality and kindness of our Vice-President, Mr. W. Reed. During the time of his membership, and especially within the last three years of his life, when he was actively engaged as one of our Council, Mr. Atkinson was always ready to render all the aid he could in advising your Executive, in all matters relating to any improvements or alterations rendered necessary in our Museum, and his services, in this respect, were the means on more than one occasion, of saving our Society considerable cost.

The name of Mr. Thomas Ellis, a Medical Practitioner of this city, and who died at an advanced age, in the course of last year, will be chiefly remembered by his very liberal donation a few years ago, of the Iron Gates, which are so great an ornament to the entrance Lodge at Lendal. Mr. Ellis, during his long life, had been a resident in this city. He was formerly the resident Medical Officer of the County Asylum, an office from which he retired many years ago, and during the declining years of his life, he was ever ready to aid the Public Institutions of the City, especially those which have for their object the alleviation of human suffering.

The Council recommend the following gentlemen for election as Honorary Members of the Society :—

Major General Nicolaus Von Kokscharow, President of the Mineralogical Society of St. Petersburg.

Dr. Alfred Nathorst, State Geologist, and a Member of the Geological survey of Sweden, Stockholm, and—

Tempest Anderson, Esquire, M.D., B.Sc., Fellow of University College, London, as a Vice-President, in the room of the late W. H. Rudston-Read, Esquire.

And the following as new Members of the Council, in the room of those who retire by rotation :—Anthony Buckle, B.A.; George S. Gibb, LL.B.; James Backhouse, junr.; George Cussons.

HEIGHT OF THE RIVER OUSE DURING 1886.

Date.	Ft.	In.
Jan. 1st	2	6
,, 2nd	1	4
,, 3rd	1	6
,, 4th	6	7
,, 5th	3	5
,, 6th	1	4
,, 7th	1	0
,, 8th	0	6
,, 9th	S. L.	
,, 10th	S. L.	
,, 11th	S. L.	
,, 12th	0	9
,, 13th	4	6
,, 14th	9	2
,, 15th	3	6
,, 16th	5	6
,, 17th	2	6
,, 18th	1	6
,, 19th	1	0
,, 20th	0	6
,, 21st	0	6
,, 22nd	0	6
,, 23rd	1	6
,, 24th	1	10
,, 25th	1	7
,, 26th	4	2
,, 27th	7	9
,, 28th	4	2
,, 29th	2	6
,, 30th	2	0
,, 31st	2	0
Feb. 1st	2	0
,, 2nd	2	2
,, 3rd	1	6
,, 4th	1	0
,, 5th	0	6
,, 6th	S. L.	
,, 7th	S. L.	
,, 8th	S. L.	
,, 9th	S. L.	
,, 10th	3	6
,, 11th	6	2
,, 12th	4	7
,, 13th	4	6
,, 14th	5	2
,, 15th	7	3
,, 16th	3	2
,, 17th	1	6
,, 18th	1	6
,, 19th	1	3
Feb. 20th	1	3
,, 21st	1	6
,, 22nd	1	2
,, 23rd	1	2
,, 24th	1	0
,, 25th	0	9
,, 26th	0	6
Summer Level from Feb. 27th to Mar. 15th.		
Mar. 16th	0	6
,, 17th	1	0
,, 18th	1	2
,, 19th	1	6
,, 20th	5	6
,, 21st	11	2
,, 22nd	12	6
,, 23rd	11	5
,, 24th	10	3
,, 25th	7	9
,, 26th	4	6
,, 27th	8	4
,, 28th	9	6
,, 29th	6	5
,, 30th	3	2
,, 31st	6	10
April 1st	5	6
,, 2nd	3	10
,, 3rd	3	1
,, 4th	2	1
,, 5th	5	6
,, 6th	6	9
,, 7th	5	6
,, 8th	4	10
,, 9th	3	2
,, 10th	1	6
,, 11th	2	0
,, 12th	1	6
,, 13th	1	0
,, 14th	Water off	
,, 15th	,,	
,, 16th	1	9
,, 17th	1	6
,, 18th	1	3
,, 19th	3	2
,, 20th	4	1
,, 21st	1	10
,, 22nd	1	6
,, 23rd	1	4
,, 24th	1	3
,, 25th	1	2
April 26th	1	2
,, 27th	1	4
,, 28th	0	9
,, 29th	0	6
,, 30th	1	0
May 1st	1	0
,, 2nd	0	6
,, 3rd	0	6
,, 4th	1	0
,, 5th	0	6
,, 6th	0	6
,, 7th	0	6
,, 8th	0	9
,, 9th	1	0
,, 10th	1	2
,, 11th	1	4
,, 12th	1	6
,, 13th	6	1
,, 14th	8	2
,, 15th	7	10
,, 16th	4	2
,, 17th	2	7
,, 18th	2	6
,, 19th	2	6
,, 20th	2	3
,, 21st	1	9
,, 22nd	1	6
,, 23rd	1	2
,, 24th	1	0
,, 25th	1	4
,, 26th	1	6
,, 27th	2	6
,, 28th	4	4
,, 29th	4	2
,, 30th	2	4
,, 31st	2	1
June 1st	1	9
,, 2nd	7	2
,, 3rd	4	2
,, 4th	2	1
,, 5th	1	0
,, 6th	1	2
,, 7th	0	9
,, 8th	0	6
,, 9th	0	6
,, 10th	0	6
,, 11th	0	4
,, 12th	0	4
Summer Level from June 13th to July 22nd.		

HEIGHT OF THE RIVER OUSE DURING 1886 (*Continued*).

Date.	Ft.	In.
Water off July 11 to 14th.		
July 23rd	1	9
,, 24th	1	6
,, 25th	1	6
,, 26th	1	3
,, 27th	7	1
,, 28th	5	0
,, 29th	1	2
,, 30th	2	0
,, 31st	1	6
Aug. 1st	1	2
,, 2nd	1	0
,, 3rd	0	6
Summer Level from Aug. 4th to 11th.		
Water off 8th & 9th.		
,, 12th	0	6
,, 13th	2	0
,, 14th	1	3
,, 15th	0	6
,, 16th	1	0
,, 17th	1	2
,, 18th	1	3
,, 19th	1	9
,, 20th	1	2
,, 21st	1	6
Summer Level from Aug. 22nd to Sept. 8th.		
Sept. 9th	1	9
,, 10th	2	2
,, 11th	2	9
,, 12th	1	2
,, 13th	1	0
Summer Level from Sept. 14th to Sept. 26th.		
Sep. 27th	0	6
,, 28th	5	2
,, 29th	1	4
,, 30th	2	9
Oct. 1st	2	9
,, 2nd	5	2
,, 3rd	2	1
,, 4th	1	2

Date.	Ft.	In.
Oct. 5th	1	0
,, 6th	S.	L.
,, 7th	4	2
,, 8th	2	1
,, 9th	1	0
,, 10th	1	9
,, 11th	1	6
,, 12th	1	10
,, 13th	4	6
,, 14th	2	6
,, 15th	1	2
,, 16th	4	9
,, 17th	4	6
,, 18th	4	7
,, 19th	4	10
,, 20th	7	10
,, 21st	5	4
,, 22nd	2	6
,, 23rd	1	9
,, 24th	0	6
,, 25th	0	6
,, 26th	1	6
,, 27th	1	2
,, 28th	0	6
,, 29th	1	4
,, 30th	2	6
,, 31st	2	9
Nov. 1st	1	6
,, 2nd	1	4
,, 3rd	1	6
,, 4th	4	2
,, 5th	3	2
,, 6th	9	1
,, 7th	11	10
,, 8th	10	9
,, 9th	7	2
,, 10th	4	2
,, 11th	2	6
,, 12th	2	1
,, 13th	2	0
,, 14th	1	6
,, 15th	2	1
,, 16th	1	9
,, 17th	1	6

Date.	Ft.	In.
Nov. 18th	1	3
,, 19th	1	3
,, 20th	1	6
,, 21st	1	6
,, 22nd	2	1
,, 23rd	1	9
,, 24th	1	6
,, 25th	1	6
,, 26th	1	4
,, 27th	1	3
,, 28th	1	3
,, 29th	1	2
,, 30th	2	6
Dec. 1st	2	3
,, 2nd	1	4
,, 3rd	1	2
,, 4th	1	2
,, 5th	1	4
,, 6th	0	6
,, 7th	2	1
,, 8th	2	6
,, 9th	5	6
,, 10th	3	4
,, 11th	2	6
,, 12th	7	4
,, 13th	10	7
,, 14th	9	6
,, 15th	4	6
,, 16th	7	6
,, 17th	5	4
,, 18th	2	6
,, 19th	2	4
,, 20th	1	7
,, 21st	1	5
,, 22nd	2	3
,, 23rd	6	7
,, 24th	3	6
,, 25th	2	3
,, 26th	2	1
,, 27th	1	9
,, 28th	1	6
,, 29th	1	4
,, 30th	0	6
,, 31st	1	2

The River Ouse was at or below Summer Level on 106 days during the year.

STATION, YORK.

Longitude 1″ 5′ W., Latitude 53″ 57′ N. Height above Mean Sea Level 51 feet.

1886.	Highest Barometer.	Lowest Barometer.	Mean Pressure.	Air Temperature.									Tension of Vapour.			Relative Humidity.		
				9 a.m.	9 p.m	Mean.	Means of		Absolute Min. and Max.				9 a m.	9 p.m.	Mean.	9 a.m.	9 p.m.	Mean
							Min.	Max.	Min.	Date.	Max.	Date.						
			ins.	°	°	°	°	°	°		°		in.	in.	in.	%	%	%
January	7th, 8 a.m. 30·149	18th, 8 a.m. 28·941	29·606	34·3	34·6	34·5	30·2	39·5	15·6	19th	53·0	3rd	·178	·191	·185	89	95	92
February	9th, 9 p.m. 30·660	1st, 6 p.m. 29·078	30·144	33·7	33·9	33·8	30·6	38·9	25·0	27th	48·0	12th	·178	·179	·179	91	91	91
March	11th, 8 a.m. 30·555	2nd, 8 a.m. 29·122	29·945	38·9	38·9	38·9	33·8	45·6	15·6	7th	61·7	24th	·210	·212	·211	90	90	90
April	16th, 9 p.m. 30·373	8th, 6 p.m. 29·015	·920	45·1	42·8	44·0	37·5	52·5	28·4	30th	66·0	27th	·234	·229	·232	78	83	81
May	5th, 9 a.m. 30·435	13th, 9 p.m. 29·257	·927	50·5	49·0	49·8	42·3	56·7	31·0	2nd	72·6	7th	·271	·268	·270	74	77	76
June	30th, 9 a.m. 30·310	12th, 6 p.m. 29·628	·977	55·5	53·3	54·4	47·7	62·8	40·0	4th	74·8	29th	·328	·326	·327	74	80	77
July	3rd, 9 a.m. 30·296	14th, 9 p.m. 29·231	·866	61·6	59·0	60·3	52·7	68·1	44·0	28th	83·2	2nd	·392	·407	·400	72	82	77
August	20th, 8 a.m. 30·295	13th, 6 p.m. 29·456	29·960	59·4	58·4	58·9	52·3	68·2	43·0	3rd	79·2	31st	·408	·418	·413	81	86	84
September	15th, 9 p.m. 30·593	10th, 8 a.m. 29·610	30·020	56·6	54·3	55·5	48·6	64·1	39·5	23rd	73·0	4th	·380	·368	·374	82	87	85
October	24th, 9 p.m. 30·453	15th, 9 p.m. 28·662	29·799	51·4	51·3	51·4	46·8	57·4	38·0	23rd	69·0	4th	·346	·347	·347	91	92	92
November	24th, 8 a.m. 30·693	6th, 8 a.m. 28·880	·861	41·9	41·8	41·9	37·0	48·4	28·2	22nd	55·3	2nd	·241	·242	·242	92	92	92
December	31st, 9 a.m. 30·570	8th, 9 p.m. 27·777	29·606	34·2	34·7	34·5	30·0	39·8	19·0	21st	52·0	6th	·172	·186	·179	86	93	90
Year	30·693	27·777	29·886	46·9	46·0	46·5	40·8	53·5					·278	·281	·280	83·3	87·3	85·3

STATION, YORK.

Thermometers 4 feet 3 inches above ground. Rain-gauge 1 foot 9 inches above ground.

1886.	Amount of Cloud.			Rainfall.			Weather, No. of Days of							Wind, No. of Observations of									Sunshine Returns.		
	9 a.m.	9 p.m.	Mean	Total.	Max.	Day	Rain	Snow	Hail	Thunder Storms	Clear Sky	Over-cast	Gale	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W	Calm	Total hours.	Per-centage 1886	Per-centage. 1885.
				ins.	ins.																				
January	6·5	5·4	6·0	3·14	·54	25th	22	15	0	0	2	8	0	12	4	8	2	8	7	13	8	0	? 17	? 7	1
February	7·2	6·3	6·8	0·95	·33	18th	16	8	0	0	2	12	0	12	7	13	6	12	0	3	3	0	? 47	? 18	11
March	7·0	6.7	6·9	2·13	·85	1st	20	9	0	0	3	16	1	9	6	15	6	12	6	5	3	0	82	23	19
April	7·3	5·3	6·3	1·89	·34	2nd	19	0	1	0	1	8	1	16	8	7	2	8	8	10	1	0	132	32	21
May	7·8	6·6	7·2	3·77	·77	12th	21	0	0	1	1	14	0	9	6	10	3	9	6	16	3	0	97	20	33
June	7·4	6·1	6·8	0·57	·26	1st	7	0	0	0	2	12	0	9	4	8	2	8	1	21	7	0	152	30	33
July	6·1	5·9	6·0	4·88	2·28	25th	16	0	0	3	2	10	0	4	1	2	3	17	3	25	7	0	162	32	34
August	7·6	6·5	7·1	2·57	·68	18th	12	0	0	1	2	14	0	6	4	3	2	18	9	13	7	0	151	33	13
September	6·9	5·7	6·3	1·16	·24	{ 9th 25th }	16	0	0	0	1	7	1	11	8	6	1	18	4	10	2	0	106	28	37
October	7·6	8·3	8·0	3·67	·95	6th	21	0	0	2	2	20	0	12	7	12	7	12	2	7	1	2	63	20	20
November	6·3	5·3	5·8	1·52	·56	5th	16	0	0	0	3	8	0	7	1	4	4	20	6	12	5	1	68	27	7
December	4·5	5·2	4·9	3·18	·50	12th	19	3	0	0	8	8	1	11	1	1	1	18	6	15	9	0	70	31	? 5
Year	6·9	6·1	6·5	29·43			205	35	1	7	29	137	4	118	57	89	39	160	58	150	56	3	1147	25·1	19·5

Table showing the Numbers of Hours of Bright Sunshine recorded at York, and the Percentages of Possible Duration for each Month and Year of the 6 Years, 1881-86.

YEAR.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		WHOLE YEAR.	
	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.
	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%
1881.	36	15	36	13	107	29	143	34	272	54	155	31	174	35	137	30	78	21	96	30	44	18	27	12	1305	30
1882.	31	13	47	17	115	31	138	33	273	55	179	36	172	34	180	40	99	27	70	22	51	20	15	7	1370	31
1883.	22	9	71	26	133	36	135	32	201	40	170	34	154	31	164	36	100	27	94	29	48	19	29	13	1321	30
1884.	24	10	34	12	87	23	126	30	210	42	175	35	143	29	193	42	115	31	96	30	34	14	6	3	1243	28
1885.	3	1	29	11	69	19	87	21	161	33	168	33	170	34	61	13	139	37	64	20	17	7	12	5	980	22
1886.	17	7	47	18	82	23	132	32	97	20	152	30	162	32	151	33	106	28	63	20	68	27	70	31	1147	26
Totals means.	133 26	9	264 44	16	593 99	27	761 127	30	1214 202	41	999 167	33	975 163	32	886 148	33	637 106	28	483 81	25	262 44	17	159 27	12	7366 1228	28

SUPPLEMENTARY RETURNS, SUPPLIED BY R. THOMPSON, ESQ.

	CHERRY HILL, YORK.				CHERRY BANK, ILKLEY.	THE HERMITAGE, OSWALDKIRK.				THE HERMITAGE, OSWALDKIRK.		
Month.	Total Depth.	Greatest Fall in 24 hours.		Number of Days on which ·01 or more fell	Total Depth.	Total Depth.	Greatest Fall in 24 hours.		Number of Days on which ·01 or more fell	Total No. of hours of bright sunshine.	Percentage of actual sunshine to "possible."	Month.
		Depth.	Date.				Depth.	Date.				
	Inches				Inches.	Inches				hrs. min.		
Jan.	3·04	·46	10th	22	5·91	3·26	·82	25th	22	54 8	22·5%	Jan.
Feb.	·97	·33	18th	18	1·16	·99	·20	19th	18	53 2	19·9	Feb.
Mar.	2·07	·85	1st	19	3·61	2·74	·35	5th	24	86 4	23·8	Mar.
April	1·92	·39	2nd	15	3·33	2·56	·56	18th	20	137 4	32·9	April
May	3·66	·69	12th	21	4·49	3·64	·66	12th	21	89 1	18·1	May
June	·71	·25	1st	8	1·40	·65	·19	1st	11	129 1	25·5	June
July	4·94	2·40	25th	15	3·48	4·83	1·57	25th	18	158 1	31·3	July
Aug.	2·34	·69	18th	11	1·92	2·33	·89	18th	11	142 2	31·3	Aug.
Sept.	1·08	·26	9th	15	2·78	1·65	·35	9th	12	100 4	26 9	Sept.
Oct.	3·68	·93	6th	21	4·90	3·01	·45	12th	18	57 5	18·0	Oct.
Nov.	1·48	·56	5th	14	2·76	2·37	·98	5th	12	75 5	30·5	Nov.
Dec.	3·46	·55	13th	21	5·73	3·76	·70	11th	13	77 2	34·8	Dec.
Total	29·35			200	40·87	31·79			200	1162	26·32% mean	

LECTURES.

The following Evening Lectures have been delivered in the Theatre of the Museum :—

Jan. 5th. "On the volcanic rocks of Puy de Dôme and Haute Loire." By T. Gough, B.Sc.

Jan. 8th. "On the deep sea explorations of the Challenger." By H. M. Platnauer, B.Sc.

March 18th. "On Vision." By H. M. Platnauer, B.Sc.

March 25th. "On Vision." (Lecture 2). By H. M. Platnauer, B.Sc.

April 14th. "Animal Parasites." By H. E. Spencer, M.R.C.S.

Dec. 1st. "On the Geological history of Reptiles." By H. M. Platnauer, B.Sc.

The following papers were read :—

May 4th. "Notes on the *Hydradephaga* found near York." By the Rev. W. C. Hey, M.A.

Nov. 2nd. "Some Botanical Notes made near Bridlington." By the Rev. W. C. Hey, M.A.

Dec. 7th. "On the Occurence of *Strophodus Rigauxi* in the Yorkshire Cornbrash." By H. M. Platnauer, B.Sc.

NEW MEMBERS.

James Backhouse, junr., *West Bank, Holgate.*
John Baren, *Parliament Street.*
Francis Collins, *Fulford.*
J. A. Cunninghame, *The Mount.*
General Daniell, *Government House, Bootham.*
William Hall, 21, *De Grey Street.*
Major George Ernest Harley, 17, *St. Mary's.*
William Hornsey, *Pavement.*
Mrs. Kleiser, *Parliament Street.*
Henry Charles Shann, *Micklegate.*
Councillor Sherwood, 61, *Micklegate.*
Colonel Stockley, *St. Peter's Grove.*
Henry Tennant, *Holgate Hill.*

LADY SUBSCRIBERS.

Mrs. Byron, 24, *Claremont Terrace.*
Miss Fanny Alice Day, 2, *St. Mary's.*
Mrs. Heslegrave, *Stonegate.*
Miss Hey, 88, *Bootham.*
Mrs. Annie Hodgson, *The Mansion House.*
Miss Huffam, 82, *Bootham.*
Miss Mawson, 22, *Burton Lane.*

ASSOCIATES.

Edward P. Allanson, 13, *Bootham Crescent.*
Walter H. Brierley, 22, *Bootham.*

RESOLUTIONS

PASSED AT THE ANNUAL MEETING, February 1st, 1887.

1. That the Report of the Council now read be adopted and printed for circulation amongst the Members, Lady Subscribers, and Associates.

2. That the thanks of the Society be given to the Members of the Council retiring from office, also to the Treasurer, Secretary, and Curators, for their valuable services; and that authority be given to the Council to give admission to the public to the Museum on Whit-Monday and Tuesday, under the same regulations as last year.

3. That the thanks of the Meeting be given to the Chairman.

THE TREASURER IN ACCOUNT WITH
THE YORKSHIRE PHILOSOPHICAL SOCIETY
FOR THE YEAR 1886.

Dr. INCOME.

		£. s. d.	£. s. d.
Subscriptions:			
Members		562 0 0	
County Members		32 0 0	
Lady Subscribers		56 0 0	
Associates		13 0 0	
Arrears		7 0 0	
Admission Fees:			
Paid in Full		3 0 0	
Paid Instalments		21 0 0	
Keys of Gates		52 5 0	
			746 5 0
Rents:			
T. G. Mann, Esq., St-Mary's Lodge		50 0 0	
Mr. Sykes, Bootham and Marygate Towers		24 0 0	
Mr. Burton, Marygate Baths		40 0 0	
York Amateur Boating Club		5 0 0	
Fine Art Society		2 0 0	
Water Works Company		0 1 0	
			121 1 0
Hire of Tent and Tables		21 5 10	
Less Carriage, Attendant fixing and removing when on Hire, New Stakes, &c.		6 10 8	
			14 15 2
Meteorological Department			15 12 0
Whitsuntide Admission Fees		12 15 1	
Less payment to 30 Attendants at 6s. each	9 0 0		
Joiner Fixing Barricades	0 8 2		
Attendance of Police	0 10 0		
		9 18 2	
			2 16 11
Gate Money			251 15 0
Catalogues and Photographs			8 14 6
			1160 19 7
Excess of Expenditure over Income			69 17 8
			£1230 17 3
Balance due to Treasurer, 31st Dec. 1885			9 13 4
Excess of Expenditure over Income, 1886			69 17 8
			£79 11 0

EXPENDITURE. **Cr.**

		£. s. d.	£. s. d.
Crown Rent			1 0 0
Corporation Rents			19 6 8
Rates and Taxes:			
Poor Rates, Income Tax, &c., St. Wilfrid and St. Olave		20 17 2	
Waterworks Company		7 8 0	
Gardeners' Licenses		3 0 0	
			31 5 2
Insurance			5 7 0
Salaries and Wages:			
Mr. Platnauer		200 0 0	
Mr. Guy		25 0 0	
Mr. Fielden		60 0 0	
Miss Baines		38 5 0	
Jas. Davison (Pension)		26 0 0	
Attendants, Museum and Hospitium:			
Attendant at Museum	57 4 0		
Female attendant at Museum	18 4 0		
Female attendant at Hospitium	26 0 0		
		101 8 0	
Gardeners, including Sunday attendance		137 16 0	
			588 9 0
Yorkshire Insurance Company—Annuity			196 16 9
Interest to Bankers			12 2 0
General Repairs, Expenses, &c.			
Museum and Hospitium		102 15 2	
Estate:			
Repairing Arch in front of Exhibition, as per Contract	20 0 0		
General Repairs	33 12 4		
		53 12 4	
			156 7 6
Gardens:			
General Expenses, Repairs, and Additions			36 14 3
Coke, Tar, &c.			5 10 4
Library: Books, Binding, &c.			31 6 6
Miscellaneous:			
Printing and Stationery			20 12 5
Printing Reports			13 10 0
Do. Communications to Members and postages			10 1 6
Coals, Gas, &c.			24 7 7
Military Bands			13 13 0
Antiquities:			
Purchases and Repairs			35 1 2
Meteorology			15 12 0
Sundries, including cleaning, Firewood, Carriage of Parcels, &c.			6 10 4
Lectures			7 4 1
			£1230 17 3
Balance due to the Treasurer 31st December, 1886			79 11 0
			£79 11 0

Audited and found correct,

York, 31st January, 1887.

J. A. CUNNINGHAME.

DONATIONS TO THE MUSEUM AND LIBRARY.

LIBRARY.

Books Presented.	Donors.
The Journal of the Chemical Society, vols. xlix and l., 1886, and Abstracts	The Society.
The Norwegian North-Atlantic Expedition, 1876-8, Mollusca, part ii, Crustacea, ii.	The Norwegian Government.
The Memoirs of the Geological Survey of India, "Palæontologia Indica," Series x., vol. iii., parts 7 and 8; series x., vol. iv., parts 1 and 2; series xiii, vol. iv., part 5; and series xiv., vol. i., part 3, and Records of Geological Survey of India, vol. xviii, part iv.; vol. xix., parts 1, 2, 3, 4	The Indian Government.
Catalogue of Birds in the British Museum, vol. ii. to xi. (inclusive)	The Trustees of the British Museum.
British Fossil Crustacea	
Amphipodous Crustacea	
Fossil Reptilia of South Africa	
Madeiran Coleoptera	
Printed Maps, Plans and Charts, 2 vols.	
Books in the Galleries of the Reading Room	
Fossil Mammalia, parts 1, 2, and 3	
Palæozoic Plants	
Blastoidea in the Geological Department, by Etheridge and Carpenter	
An introduction to the Study of Meteorites	
The Illustrations of Type specimens of Lepidoptera heterocera in the British Museum, part vi.	
Guide to the Exhibition Galleries	
Types of Coleoptera, part i.	
The Report of the Zoological Collections made in the Indo-Pacific Ocean during the voyage of H.M.S. "Alert," 1881-2	

Books Presented.	Donors.
The Report of the British Association for the Advancement of Science, held at Aberdeen, 1885, and Canadian Economics, Montreal, 1884	The British Association.
Atti della Reale Accademia Dei Lincei, vol., Nos. 27 and 28 ; vol. ii., Nos. 1 to 10, 1886.........................	The Academy.
The Publications of the Russian Geological Society, 42 parts, with Maps..	The Society.
The Transactions of the Zoological Society of London, vol. xi., part 11, and vol. xii, parts 1, 2, 3	The Society.
The Annual Report, Quarterly, Monthly, and Weekly Weather Reports published by the Meteorological Society during the year 1886	The Meteorological Society.
The Bulletin of the American Geographical Society, 6 parts	The Society.
Retrospections, Social and Archæological, vol. ii., by C. Roach Smith, F.S.A. ..	The Author.
Astronomical Observations made at the Royal Observatory, Edinburgh, by C. Piazzi Smyth, F.R.S.E., F.R.A.S.....	The Author.
The Annual Report of the Smithsonian Institution for 1884, and Third Annual Report of the Bureau of Ethnology ..	The Institution.
The Fifth Annual Report of the United States Geological Survey, 1883-4	The Survey.
The Memoirs of the Egyptian Exploration Fund, part i., 1883-4, part ii., 1884-5..	W. W. Morrell, Esq.
The Geology of the Hull and Barnsley Railway, by the Rev. E. M. Cole, M.A.	The Author.
The Reports of the French Jury at the International Exhibition, 1851-1862, 2 vols...........................	E. Hailstone, Esq., F.S.A., Walton Hall, Wakefield.
Catalogue of the South Kensington Museum Special Loan Exhibition, 1862	
A Lithograph of the Fossil Tree (Sigillaria) discovered at Clayton, near Bradford, 1886	

Books Presented.	Donors.
Queensland, its Resources and Institutions, and Catalogue of Exhibits in the Colonial and Indian Exhibition, London, 1886	Sir James Garrick, Executive Commissioner for Queensland.
Papers from the Proceedings of the Niederrheinische Gesellschaft for 1868. Report on the Brachiopoda obtained in the Pourtales Expedition	Mr. J. F. Walker, M.A.
The Proceedings of the Geologists' Association, vol. ix., Nos. 4 and 5	The Association.
The Journal of the Northamptonshire Natural History Society and Field Club, vol. iv., Nos. 25, 26, and 27	The Society.
The Transactions, part i., and Annual Report of the Leicester Literary and Philosophical Society, 1886	The Society.
The Proceedings of the Warwickshire Naturalists' Field Club, 1885	The Club.
The Proceedings of the Bristol Naturalists' Society, new series, vol. v., part 1.	The Society.
The Report and List of Members of the Royal Institution of Great Britain	The Institution.
The Transactions of the Leeds Geological Association.	The Association.
The Report and Proceedings of the Belfast Natural History and Philosophical Society	The Society.
Catalogue of Meteorites, by Julien de Siemachko	The Author.
Annalen des K.K., Naturhistorischen Hofmuseums, Band i., Nos. 1 and 2, by Franz Ritter Von Hauer	The Author.
Louis Pasteur, his Life and Labours, by Joseph Ewart, M.D.	The Author.
Anuario del Ovservatorio Astronomico Nacional Mexico, by Angel Anguiano..	The Author.
Extrait du Bulletin Du Musée Royal, Belgique, by M. L. Dollo	The Author.
The Transactions of the Liverpool Geological Association, vol. v.	The Association.

Books Presented.	Donors.
Bidrag til Myzostomernes Anatomi og Histologi af Fridtj of Hansen	The Council, Bergen Museum.
Bulletin des Procès-Verbaux de la Société d'émulation d'Abbeville, 4 parts	The Society.
The 11th Report of the Town Museum, Leicester	The Council.
The Third Annual Report of the Malton Field Naturalists', 1885-6	The Society.
The 20th Annual Report of the Cambridge Museums and Lecture Room Syndicate	Professor Hughes.
The Annual Report of the Leeds Literary and Philosophical Society, 1885-6	The Society.
The Annual Report of the Brighton and Sussex Natural History Society, 1885-6.	The Society.
The 54th Annual Report of the Scarborough Philosophical Society, 1885..	The Society.
The Annual Report of the Liverpool Students' Association	The Association.
Bollettino delle Pubblicazioni Italiane, Nos. 1 to 24......................	The Society.

REED REFERENCE LIBRARY.

Donor—W. Reed, Esq., F.G.S.

The Geology of Holderness and adjoining parts of Yorkshire and Lincolnshire, by Clement Reid.	1885
The Geology of Bridlington Bay, by J. R. Dakyns and C. Fox Strangways.	,,
The Geology of Eskdale, Rosedale, &c., by C. Reid and C. Fox Strangways.	,,
The Geology of the South West part of Lincolnshire, with parts of Leicestershire and Nottinghamshire, by A. G. Jukes-Brown and W. H. Dalton.	,,
The Geology of the Coasts adjoining Rhyl, Abergele, and Colwyn, by A. Strahan and H. Tiddeman.	,,

Dictionnaire abrégé de Medicine et des Sciences, Physiques, &c., by Charles Robin.	1886
Technological Dictionary, English, German, and French, 3rd edition, with Supplement, by A. and L. Tolhausen.	1885
The Reports of the Scientific Results of the Exploring Voyage of H. M. S. Challenger, 1873, 76; vols. 14, 15, 16.	1886
Aristotle's History of Animals. Translated by Richard Creswell, M.A.	1862
The Student's Hand-book of Historical Geology, by A. J. Jukes-Brown.	1816
Pliny's Natural History, vi. vols. Translated by Dr. Bostock and H. T. Riley, B.A.	,,
A Catalogue of Australian Fossils, by Robert Etheridge, Jun.	1878
Text Book of Field Geology, 2nd edition, by W. H. Penning.	1879

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MUSEUM.

GEOLOGICAL DEPARTMENT.

	DONORS.
Specimens of *Magas Geinitzii* and *Kingena lima* from the Lower Chalk, Folkestone. *Rhynconella senticosa*, from the inferior Oolite, Halfway House, Dorset, and *Sphæroceras Sauzei*, from the inferior Oolite, Coombe Quarry, Sherborne, Dorset	Mr. J. F. Walker, M.A.
A series of 31 Brachiopoda from the inferior Oolite of Somerset and Dorset.	
About 50 specimens from the Gault, 1 specimen each of *Terebratula diphya* and *Terebratula triangularis*, and several specimens of *Spongia floriceps* from the Lower Calcareous Grit, Yorkshire....	
A collection of Rock Specimens illustrating the stratigraphy of the Isle of Wight	Mr. Wm. Reed, F.G.S.
Paddle Bone of *Ichthyosaurus* and other Fossils from the Lias and Oolitic formations	

	Donors.
A series of Bones from Kirkdale Cave, the Collection of the Rev. Joseph Smyth, Kirby Moorside	Mrs. W. Collins, Knaresbro'.
Specimen from the Estuarine Sandstone, shewing Fish scales	Mrs. Hawkridge, Scarborough.
14 specimens of Plant remains, from the Coal Measures of Langton Colliery, Nottingham	Col. D. C. Walker, R.E.
1 specimen of Coral Rag from the Walls of Scarboro' Castle	
1 specimen of Lias from Staithes	
1 specimen of Sandstone from the site of the Railway Workshops, York	
1 specimen of Fossiliferous Sandstone, from Strensall Common, and an Oyster from the Beach, Torquay............	
Fragment of the Skull of a Horse from the Peat near Husthwaite Station....	Lieut. Col. Peckitt.
A series of 18 specimens of Fossils from the Oxford Clay	Mr. C. H. Parkinson, 11, Clarence Street.
A number of Teeth of *Elephas primigenius* from the Gravels of Elton, Northamptonshire	Mr. C. E. Leeds.
A series of Fossils.....................	Miss Schwabe, Fulford.

MINERALOGY.

A series of Minerals....................	Miss Schwabe, Fulford.
2 specimens of Celestine from Knaresborough	Mr. J. Collins, Coventry.
Specimen of Strontianite from Ahlen, Westphalia	Miss Dillon, Coney Street.
2 specimens of Jarrowite from Jarrow ..	Mr. R. Howse, Newcastle.

	Donors.
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Ancient Key to Auburn Church, now under the Sea	Mr. T. B. Whytehead.
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Three Ancient Charters connected with the Knights Templars, and a grant from Sir Richard de Goldesborough, in 1280.	The Rev. Canon Raine, M.A.
An Ancient Dutch Snuff Box	Mrs. M. Scotchburn, Edinbro' House, Bridlington.
A very fine Three-handled Pot, covered with dark green glaze, probably made at York; a small Jug, a Glass Bottle, several Locks, Keys, and Horns, all found in the drain at Cawood........	The Cawood Drainage Commissioners.
Silver Pennies of Canute and Henry III., and a Threepence of Charles I., minted at York	Mr. T. S. Noble.

ZOOLOGY AND COMPARATIVE ANATOMY.

	Donors.
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The Skull of a Rabbit, shewing curious abnormal dentition	Mr. Wm. Reed, F.G.S.
Two Himalayan Pheasants' Skins	Dr. Dunhill.
A case containing two Bitterns, "*Bataurus stellaris*," shot on the Norfolk Coast, January, 1875	Mr. J. Backhouse, Jun.

——o——

APPARATUS, &c.

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A Large Book-Case for the General Library	Mr. Wm. Reed, F.G.S.

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,, ,, Ray Society.
Sowerby's Thesaurus Conchyliorum.
London, Edinburgh, and Dublin Philosophical Magazines.
Annals and Magazine of Natural History.
Geological Magazine.
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Numismatic Chronicle.
Memoirs de la Societié Paléontologique Suisse.
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Geological Record.
Nature.
Publications of the Surtees Society.
Hardwick's "Science Gossip."
The Yorkshire Archæological Journal.

COMMUNICATIONS
TO THE
MONTHLY MEETING
OF THE
YORKSHIRE PHILOSOPHICAL SOCIETY,
1886.

NOTES ON THE *HYDRADEPHAGA* FOUND NEAR YORK.

The neighbourhood of York is singularly rich in *Hydradephaga.* Even yet it abounds in suitable localities, such as bogs, ponds, undrained commons, and sluggish streams. Every year, however, these places diminish in number and extent. It is therefore very desirable that this Society should possess a record of the most remarkable species, with a few notes upon their habitats, their time of appearance, and their comparative rarity.

Hydroporus Scalesianus Steph. is confined in England (so far as present knowledge goes) to a single moss-grown pond in Askham Bog, where it may be taken in moderate abundance in April. A pair of this insect was taken in Norfolk somewhere about 1825, but it was never heard of again in England till rediscovered at Askham Bog by Archdeacon Hey some forty years ago. This is one of many signs of affinity between Askham Bog and the Fen country. This species has a wide foreign distribution, occurring in Northern France, Germany, and Sweden.

Hydroporus oblongus, Steph. occurs in company with *H. Scalesianus,* and only in that pond, so far as my experience goes. It appears as early as the middle of March, but is always scarce, and does not appear, I believe, after May.

Hydroporus decoratus, Gyll.—This scarce and charming insect is abundant in many Askham Bog Ponds throughout spring and autumn. In April it is in profusion.

Hydroporus rufifrons, Duft.—A rarity not seldom afforded by Askham Bog in the greatest abundance. It affects shallow floodings, where it appears with incredible rapidity, and sometimes in vast numbers. I have seen it most abundant in the end of Summer and the beginning of Spring.

Hydroporus neglectus, Schaum, occasionally turns up at Askham Bog, but has been found much more abundantly near Strensall Common.

Colymbetes Grapii, Gyll, inhabits a mossy swamp at Askham, and is a Spring insect.

Colymbetes bistriatus, Berg., occurred in a Strensall pond, now drained.

Agabus abbreviatus, Steph. This pretty insect is well distributed in Askham Bog, and has found its way into the Hobmoor brick ponds, so that its extinction need not be much feared.

Agabus unguicularis,—Th. Is still more abundant at Askham.

Agabus uliginosus,—Is the companion of *H. rufifrons* in floodings. The dull form of the female is particularly abundant.

Agabus femoralis, Pk, inhabited ponds on Strensall Common, now drained—one of the many sins the War Office will have to answer for.

Agabus agilis, F. abounds at Askham Bog.

Dytiscus circumcinctus, Ahr.—A single specimen was taken about fifteen years ago in very deep water in Askham Bog.

Dytiscus dimidiatus, Berg. has also been taken, once or twice, in the large ponds at Askham.

Hydaticus transversalis, Berg.—Still lingers at Askham Bog. Last year I took a pair—the only ones I have seen for three years.

The other Hydradephaga worth enumerating which occur near York are *Haliplus fulvus, flavicollis, cinereus. Hydroporus reticulatus, inæcqualis, picipes, pictus, granularis, depressus, assimilis, dorsalis, Gylenhalli, tristis, umbrosus, obscurus, vittula, memnonius, Ilybius ater, obscurus, and guttiger.*

W. C. HEY.

ON THE OCCURRENCE OF *STROPHODUS RIGAUXI (SAUV.)* IN THE YORKSHIRE CORNBRASH.

While at Scarborough, during the present summer, I had the good fortune to find a tooth of a Cestraciontid fish in the Cornbrash on the north side of the Cliff. In determining the species, however, I encountered certain difficulties; but before dwelling upon these, it is perhaps advisable to give a short description of the genus *Strophodus* and an account of its range in time.

The genus is essentially Mesozoic: it ranges from the Trias to Upper Cretaceous. The earliest species known is *S. angustissimus* of the Muschelkalk: the so-called *Strophodus arcuatus* from the Kuperschiefer of Riechelsdorf is not a Strophodus; it belongs to the genus *Wodnika* (Münster).[*] In general appearance the teeth of *Stophodus* are very like those of *Psammodus;* and, for a long time, species of the former were included in the latter. In connection with this point it is noteworthy that the earliest species of Strophodus (from the Muschelkalk) are of small size,—small compared with the Lower Oolite species, and very small compared with those found in the Carboniferous Limestone. This would of itself negative the idea of the direct descent of *Strophodus* from *Psammodus,* and would point to profound modification of type. But, besides this, there are considerable differences of arrangement in the dentition of the two genera; indeed most ichthyologists now agree in removing *Psammodus* from the *Cestraciontidæ.*

The following is a list of the species at present recognised as belonging to *Strophodus* in the British (Natural History) Museum Collection.

S. angustissimus.	Mü.	Muschekalk, Jena, &c.
S. favosus.	*Ag.*	Inferior Oolite (Dundry). Great Oolite (Stonesfield). Forest Marble (Malmesbury).
S. tenuis.	*Ag.*	Great Oolite and Forest Marble.

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[*] Beitr. VI. tab. 1., fig. 1; also Giebel, Fauna d. Vorw. I., p. 329.

S. magnus. *Ag.* Great Oolite (Minchinhampton and Stonesfield).
Cornbrash (Peterborough).
S. subreticulatus.[*] *Ag.* Oxford Clay (Shotover).
S. reticulatus. *Ag.* Oxford Clay (Shotover, Peterborough).
Strophodus sp. Corallian.
S. sulcatus. *Ag.* Upper Greensand (Maidstone).
S. asper. Chalk (Lewes).
Strophodus Sp. Chalk.

If to the above we add *S. radiato punctatus* *Ag.*[†] from the Kelloway rock of Scarborough (type specimen, probably the only one, in the Scarborough Museum), the list from *S. favosus* may be taken as representative of English species of *Strophodus.* It seems to me, however, highly probable that a careful revision of *Strophodus* would result in the removal of the cretaceous species from the genus. In addition to species mentioned above, Agassiz describes *S. longidens* (Great Oolite, Caen), *S. irregulæis* (Inferior Oolite, Neuenberg), *S. elytra* (Muschelkalk, Luneville), and *S. punctatus* (Greensand of Kelheim in Bavaria).

The genus *Strophodus* is described by Agassiz in the following terms :—" Les caracteres les plus marquans et les plus constans que présentent les dents de *Strophodus*, c'est d'être allongées, plus ou moins rétrécies et tronquées aux deux bouts, de présenter une torsion plus on moins sensible suivant le diamètre longitudinal, d'être plus on moins renflées dans la partie moyenne, ou vers l'une des extrémités de la couronne, d'offrir une surface réticulée, dont le réseau, plus on moins en relief, rend les pores de l'émail quelquefois très-peu sensibles. Ces dents sont tantôt très-allongées et faiblement renflées, tantôt plus fortement arquées et tordues, tantôt plus plates et plus larges, mais tonjours d'un aspect uniforme, et sur toute la couronne, sans arrête on crête saillante dans une direction déterminée. La racine est large et plate; dans les dents les plus hautes seulement elle est énchancrée au milieu. (Poiss. foss., pp. 116, 117.)

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[*] Probably a variety of *S. reticulatus.*
[†] Poissons fossils III., p. 128, and t. 18, fig. 27.

This description is, on the whole, as satisfactory as any that could be founded on single teeth. But it does not apply to some teeth which Agassiz evidently considered to belong to this genus. This difficulty caused Sauvage to separate certain teeth from *Strophodus*, and on these he founded his genus *Curtodus*. In a paper printed in the proceedings of the "Société académique de Boulogne-sur-mer," for 1866, and afterwards re-issued in his "Poissons fossiles des formations secondaires du Boullonais," he gives the following description of *Curtodus*:—"Dents ovales on arrondies, reticulées en dos d'âne. Nons avons créé ce genre pour les dents qui diffèrent de celles de *Strophodus*, en ce qu' elles ne sont pas infléchies suivant leur longuer, mais bombées."

Of this division, too, we may fairly say that it is as sound as any classification founded on detached teeth can be. But the discovery of an almost perfect series of teeth in the Great Oolite of Caen at once gave unity to our knowledge by exhibiting the dentition of the genus. This important and interesting specimen was described and figured by Professor Owen* as *Strophodus medius*. Any remarks in this paper involving a reference to the dentition of *Strophodus* will be founded upon the description quoted above. A glance at the specimen referred to reveals the great diversity that obtains between teeth in the same jaw. Sauvage's genus *Curtodus* is evidently founded on teeth of the extreme lateral rows. It must be observed, though, in justice to this able palæontologist, that this specimen of *S. medius* was not discovered till nine years after *Curtodus* had been described, so that although his genus cannot stand, its separation was quite warranted by the information then in possession of ichthyologists.

The tooth from our own Cornbrash (given in natural size Pl. I., figs. 1 and 2, and enlarged, figs. 1a. and 2a.) is undoubtedly Agassiz' *Strophodus favosus*. But unfortunately the *S. favosus* of Agassiz is a name, and nothing more. Agassiz gives the name in his list of species, but he neither describes nor figures it. This is the more unfortunate that the series labelled by him *S. favosus* in the Egerton collection leaves no doubt as to what he meant. Under the circumstances, however, Sauvage's name claims priority. This *Curtodus Rigauxi* is doubtless founded on the lateral teeth of Agassiz' *Strophodus favosus*. The description he gives of the species is as follows :—“ Dents de grandeur moyenne, ovalaires, plus renflées à la partie moyenne qu' aux latèrales, en dos d'âne. Les reticulations de la surface semblent rayonner de la partie la plus elevée, formant une serie de mailles affectant la forme lozangique en haut, beaucoup plus allongées vers la racine. Les pores sont larges, mais deviennent beaucoup plus étroits en s' approchant de la couronne : celle-ci est separèe du reste de la dent par un léger bourrelet d' où partent des reticulations verticales.

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* Geol. Mag., vol. VI., p. 193 and pl. VII.

Cette espece, le type du genre, donnée par Bouchard au musée de Boulogne, provient du Bathonien de Marquise.”[†]

Though Sauvage's genus *Custodus* cannot now be accepted, his specific name stands, and we must substitute *Strophodus Rigauxi* for *Strophodus favosus*.[*] But as the description given by Sauvage refers to teeth of the 5th and 6th rows (counting from the median plane of the jaw) it must, obviously, be supplemented by descriptions of the median and infra-median types. These descriptions, which I shall proceed to give, are founded on specimens in the Egerton collection labelled by Agassiz *Strophodus favosus*—which specimens are now in the British (Natural History) Museum. Two median teeth are thus labelled[†] (one, however, with a query) : in general character they strongly resemble the corresponding teeth of *S. magnus*, but differ from them in their ornamentation, the ridges being stronger but not so markedly radiating (some, indeed, are almost parallel). These ridges are most marked near the crown : the tooth is almost punctate near the margin. There is only one tooth of the third row ; this is rhomboidal and very convex, the ridges are tolerably well marked, wavy and with confluent margins; there is no punctation. The teeth of the fourth row are small, rhomboidal, and deeply punctate.

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[*] Poiss. foss. des form, sec. du Boull., p. 53, and pl. III., figs. 7 and 7a.

There is a woodcut of *S. favosus* in “Science Gossip” for May, 1885, in one of a series of interesting papers by A. Smith Woodward, on Fossil Sharks and Rays. Any one desiring a clear and concise summary of our present knowledge on the subject should read these papers.

[†] The median teeth in the British Museum collection labelled *S. favosus* by the Earl of Enniskillen are *S. magnus*.

The affinities of the species are with *S. magnus* and *S. subreticulatus*, both of which it strongly resembles in general appearance, but it is more deeply pitted than either.

A careful revision of the genus is needed, and would lead to a rearrangement, the extent of which it is impossible to predict. But it is very probable that the species at present distinguished will be grouped round three types, *S. magnus*, *S. tenuis*, and *S. Rigauxi (favosus)*—the last named species having a smaller jaw than either of the others.

I must, in conclusion, express my obligation to Mr. A. Smith Woodward, of the British (Natural History) Museum, through whose kindness I was able to get access to the specimens in our national collection.

H. M. PLATNAUER.

BRITISH MUSEUM
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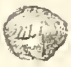
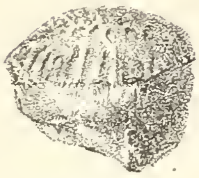


Fig. 1.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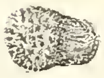
Fig. 2.

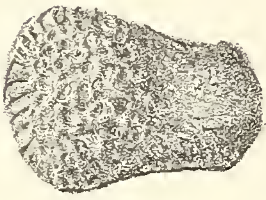
Fig. 2a.

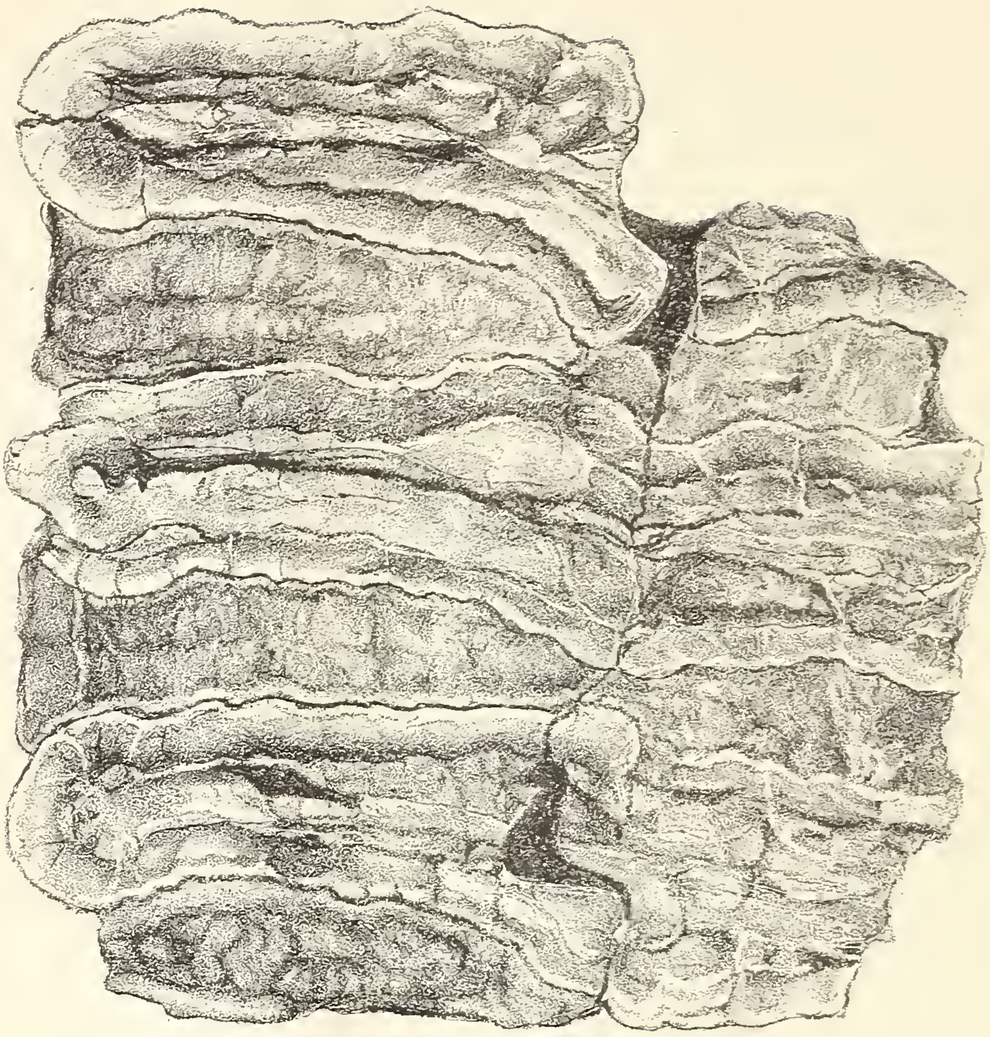
Fig. 6.

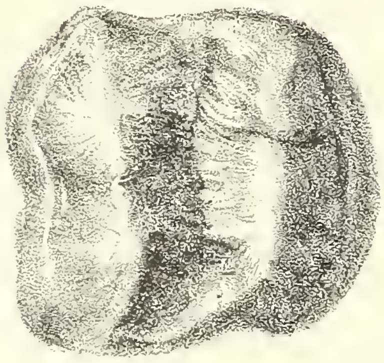
Fig. 3.

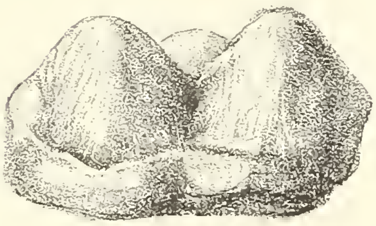
Fig. 3a.

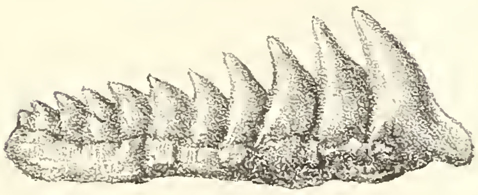
Fig. 4.

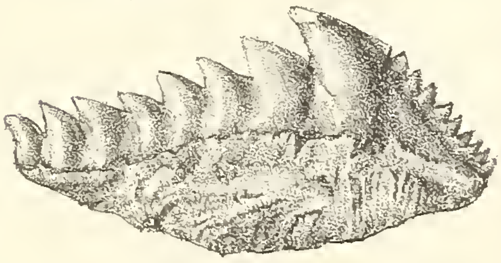
Fig. 5.

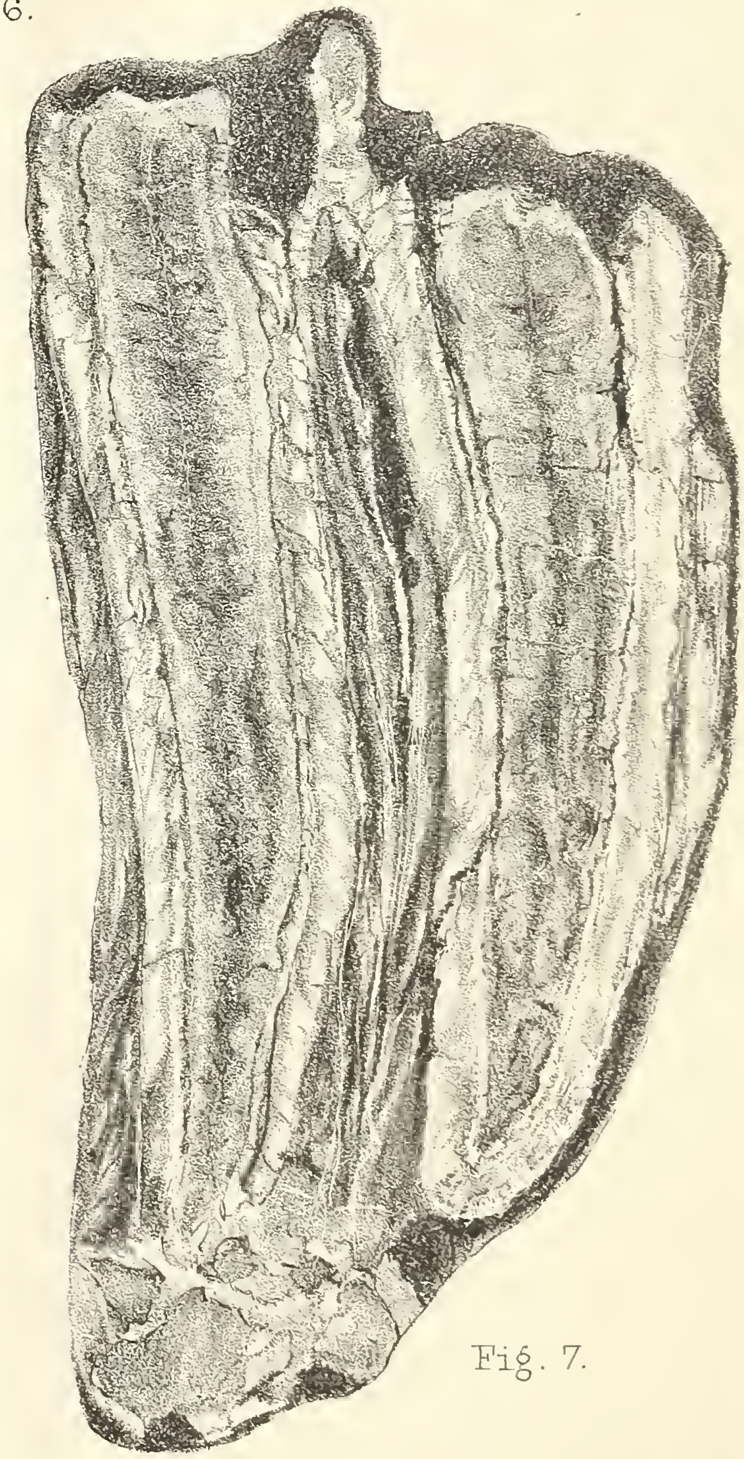
Fig. 7.

G. M. Herschell del. et lith. West, Newman & Co. imp.

EXPLANATION OF PLATE I.

(This Plate is Presented by W. Reed, Esq., F.G.S.*)*

Fig. 1. Tooth of *Strophodus Rigauxi* (Sauv.), side view (see pp. 36—40.)

,, 1*a*. The same, enlarged.

,, 2. The same, shewing the crown ; natural size.

,, 2*a*. do. do. enlarged.

,, 3. Tooth of *Hyænarctos Sivalensis* (Falc. and Caut :) shewing the crown.

,, 3*a*. The same, side view.

(This Tooth is referred to by Prof. W. H. Flower, in a paper on the occurrence of Hyænarctos in the Red Crag; Quarterly Journal, Geological Society, vol. xxxiii (1877), p. 534.)

,, 4. Tooth of *Notidanus gigas*. (Sism :)

(Described, with woodcut, by Mr. A. Smith Woodward, F.G.S. See Geological Magazine, June, 1886, p. 255.)

,, 5. Tooth of *Notidanus Meneghenii*. (Law :)

(Described, with woodcut, by Mr. A. Smith Woodward, F.G.S. See Geological Magazine, June, 1886, pp. 255—6.)

,, 6. Section of molar of *Elephas antiquus (?)*

Described and figured in Prof. Leith Adams' monograph on British fossil elephants (in the Palæontographical Society's publications) ; pp. 178—9, pl. 26, fig. 2.

,, 7. Section of molar of *Elephas antiquus (?)*

Described and figured in the "British fossil elephants," p. 179, pl. xxvi, fig. 4.

Note.—The last two Specimens are, in the explanation of pl. xxvi of Prof. Adams' monograph, incorrectly referred to as being in *Leeds* Museum instead of in *York* Museum.

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